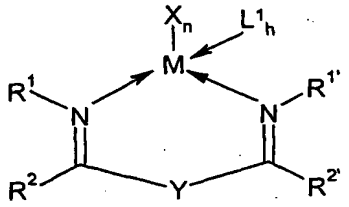
We claim:

1. A catalyst system for preparing homopolymers or copolymers of olefins, which is obtainable by reacting at least one transition metal compound with at least one cocatalyst which is able to convert the transition metal compound into a species which displays polymerization activity toward at least one olefin, wherein the transition metal compound has the formula (I),



(I)

where

M is an element of group 3, 4, 5, 6, 7, 8, 9 or 10 of the Periodic Table of the Elements or the lanthanides,

X are identical or different and are each an organic or inorganic anionic monovalent ligand, where two radicals X may also be joined to form a divalent radical,

n is 1, 2, 3 or 4,

L^1 is an organic or inorganic uncharged ligand,

h is an integer from 0 to 4,

R^1 and $R^{1'}$ can be identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

R^2 and $R^{2'}$ can be identical or different and are each a substituted or unsubstituted C_6-C_{40}-aryl radical or C_2-C_{40}-heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S or P,

and

Y is a divalent group between the two sp^2-hybridized carbon atoms and is selected from the group consisting of the two-membered bridges -N(R^3)-N(R^4)- and -O-N(R^5)- and the one-membered bridges -O-, -N(R^6)-, -N(OR^7)- and -N(NR^8R^9)-,

where

R^3, R^4, R^5, R^6, R^7, R^8 and R^9 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms, where two adjacent radicals may also form a divalent organic group having from 1 to 40 carbon atoms which together with the atom or atoms connecting its ends forms a heterocyclic ring system.

2. A catalyst system as claimed in claim 1, wherein the transition metal compound has a formula (I)

in which

M is Ni or Pd,

X is halogen,

n is 2,

h is 0,

R^1 and $R^{1'}$ are identical and are each a substituted or unsubstituted C_6-C_{40}-aryl radical or a nitrogen-containing heteroaromatic radical having from 4 to 20 carbon atoms,

and

the other variables are as defined for the formula (I).

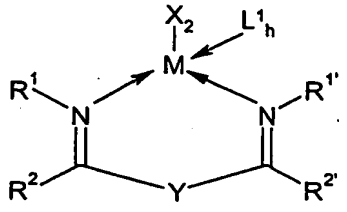
3. A catalyst system as claimed in claim 1 or 2, wherein the cocatalyst is an aluminoxane.

4. A catalyst system as claimed in any of claims 1 to 3 which further comprises a support.

5. The use of a catalyst system as claimed in any of claims 1 to 4 for preparing polyolefins.

6. A process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of a catalyst system as claimed in any of claims 1 to 4.

7. A transition metal compound of the formula (I)

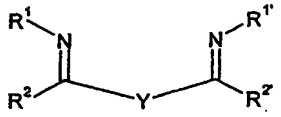


(I)

where

the variables are as defined in claim 1 or 2.

8. The use of a ligand system of the formula (II)



(II)

for preparing a transition metal compound,
where the variables are as defined in claim 1 or 2.

9. A ligand system of the formula (II) as claimed in claim 8, wherein the variables R^1, $R^{1'}$, R^2 and $R^{2'}$ are as defined in claim 1 or 2 and Y is $-N(R^3)-N(R^4)-$ or $-O-N(R^5)-$, where R^3, R^4 and R^5 are as defined in claim 1 or 2.

10. A process for preparing a transition metal compound, which comprises reacting a ligand system as claimed in claim 8 with a transition metal compound.

R^3, R^4, R^5, R^6, R^7, R^8 and R^9 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms, where two adjacent radicals may also form a divalent organic group having from 1 to 40 carbon atoms which together with the atom or atoms connecting its ends forms a heterocyclic ring system,

to the use of such catalyst systems for preparing polyolefins, to a process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of a catalyst system according to the present invention, to transition metal compounds of the formula (I) themselves, to the use of diimine ligand systems for preparing transition metal compounds and to the preparation of transition metal compounds and specific diimine ligand systems themselves.